



DOI status in IVOA

« Using DOI to cite data in articles »



DCP & CSP:
Gilles Landais
Gus Muench
Raffele d'Abrusco



DOI in IVOA



DOI, an original (FAIR) identifier



- **Sustainable** identifier associated with a **URL** (landing page)
- Dedicated for **citation**
- An identifier with **meta-data** (which allows to extract the Bibtex)

ex : `curl -LH "Accept: application/x-bibtex" https://doi.org/10.5270/esa-1ugzkg7`

- Not managed by IVOA:
DOI are Generated by institutes, data-centers via DOI recording organization
(ex : Crossref, DataCite)

.. and :

- DOI allows to build an interconnected network of resources
- Used for many resources type: articles, datasets, services, softwares, ...
- Interdisciplinary identifier : standard adopted by all sciences

Comparison with VO registries



IVOA registry

```

<?record>
<header>
<identifier>ivo://CDS.VizieR/J/AJ/159/9</identifier>
<datestamp>2021-05-19T12:38:14Z</datestamp>
<setSpecJ.AJ>/setSpec
</header>
</record>
</header>
<resource xmlns:ivo="http://www.ivoa.net/xml/VOResource/v1.0" ... >
<title>HD 150382 lithium-rich star at the early-AGB stage</title>
<shortName>J/AJ/159/9</shortName>
<identifier>ivo://CDS.VizieR/J/AJ/159/9</identifier>
<altIdentifier>doi:10.26093/cds/vizieR.51590009</altIdentifier>
<creation>
<publisher ivo-id="ivo://CDS"></publisher>
<creator>=<name>Holanda N.</name></creator>
<creator>=<name>Drake N.A.</name></creator>
<creator>=<name>Pereira C.B.</name></creator>
<date role="Updated">2020-02-20T07:59:08Z</date>
<date role="Created">2020-02-20T07:59:08Z</date>
<contact>
<name>CDS support team</name>
<address>CDS, Observatoire de Strasbourg, 11 rue de l'Universite, F-67000 Strasbourg, France</address>
<email>cds-question@unistra.fr</email>
</contact>
</creation>
<description>
<subject>Chemical abundances</subject>
<subject>Effective temperature</subject>
<subject>Lithium-rich stars</subject>
</description>
</resource>

```

authors

Pub.

keywords

Resource links

Resource links

Rights

? Interoperability desc.

DOI metadata

```

<?xml version="1.0" encoding="UTF-8"?>
<resource xmlns="http://datacite.org/schema/kernel-4" ... >
<identifier identifierType="DOI">10.26093/CDS/VIZIER.51590009</identifier>
<creators>
<creator>
<creatorName>Holanda N.</creatorName>
<nameIdentifier nameIdentifierScheme="ORCID" schemeURI="http://orcid.org/">0006-0002-8504-6248</nameIdentifier>
</creator>
<creator>
<creatorName> Drake N.A.</creatorName>
</creator>
<creator>
<creatorName> Pereira C.B.</creatorName>
</creator>
</creators>
</titles>
<title xml:lang="en">HD 150382 lithium-rich star at the early-AGB stage</title>
</titles>
<publisher>Centre de Donnees Strasbourg (CDS)</publisher>
<publicationYear>2020</publicationYear>
<subjects>
<subject schemeURI="https://cdsarc.unistra.fr/doc/ADCKwds.htm" subjectScheme="ADC Keywords"> Stars, giant
<subject schemeURI="https://cdsarc.unistra.fr/doc/ADCKwds.htm" subjectScheme="ADC Keywords"> Effective temperatures
<subject schemeURI="https://cdsarc.unistra.fr/doc/ADCKwds.htm" subjectScheme="ADC Keywords"> Abundances
<subject schemeURI="https://cdsarc.unistra.fr/doc/ADCKwds.htm" subjectScheme="ADC Keywords"> Rotational velocities
<subject schemeURI="https://cdsarc.unistra.fr/doc/ADCKwds.htm" subjectScheme="ADC Keywords"> Equivalent widths</subject>
</subjects>
</dates>
<date dateType="Created">20-Feb-2020</date>
</dates>
<resourceType resourceTypeGeneral="Dataset">Dataset</resourceType>
<alternateIdentifiers>
<alternateIdentifier alternateIdentifierType="Internal ID">J/AJ/159/9</alternateIdentifier>
<alternateIdentifier alternateIdentifierType="Ivoid">ivo://CDS.VizieR/j/aj/159/9</alternateIdentifier>
</alternateIdentifiers>
<relatedIdentifiers>
<relatedIdentifier relatedIdentifierType="bibcode" relationType="IsSupplementTo">2020AJ...159...9H</relatedIdentifier>
<relatedIdentifier relatedIdentifierType="DOI" relationType="IsSupplementTo">10.3847/1538-3881/ab5528</relatedIdentifier>
<relatedIdentifier relatedIdentifierType="DOI" relationType="Cites">10.26093/cds/vizieR</relatedIdentifier>
</relatedIdentifiers>
</rightsList>
<rights rightsURI="https://cds.unistra.fr/vizieR-org/licences_vizieR.html">Refer to CDS usage</rights>
</rightsList>
</descriptions>
<description descriptionType="Other">
VizieR online Data Catalogue associated with article published in journal Astronomical Journal (AAS) with title 'HD 150382: a lithium-rich star at the early-AGB stage' (bibcode: 2020AJ...159...9H)
</description>
</descriptions>
</geolocations>
<geolocation>
<geolocationPlace>Strasbourg astronomical Observatory, France</geolocationPlace>
</geolocation>
</geolocations>
</resource>

```

authors

Pub.

keywords

Resource links

Rights

Pub.

DOI status in IVOA framework



Include DOI in Registry

VOResource 1.2 M.Demleitner et al.

→ scheme to specify DOI as alternated identifier

```
<identifier>ivo://CDS.VizieR/I/355</identifier>  
<altIdentifier>doi:10.26093/cds/vizie.1355</altIdentifier>
```

```
<relationship>  
  <relationshipType>isVariantFormOf</relationshipType>  
  <relatedResource>doi: 10.5270/esa-qa4lep3</relatedResource>  
</relationship>
```

Data Origin in VO result

(see presentation Wednesday 10th may)

→ Allow citable identifier (DOI) in VOTable output

```
<INFO ID="publication_id" value="doi:10.26093/cds/vizie.51610036"/>
```

IVOA Working Draft



*International
Virtual
Observatory
Alliance*

VOResource: an XML Encoding Schema for Resource Metadata

Version 1.2

IVOA Working Draft 2023-01-05

Working Group
Registry



*International
Virtual
Observatory
Alliance*

Data Origin in the VO

Version 1.0

IVOA Note 2022-10-30

Working Group
DCP

DOI status in IVOA



Working group (DCP, A.Schaaff et al., conf IVOA 2018)

<https://wiki.ivoa.net/internal/IVOA/lvoaDCP/DOI-reports-and-feedbacks.pdf>

Andre Schaaff, Tim Jenness, Raffaele D'Abrusco, Gilles Landais, August Muench, Anne Raugh, Arnold Rots, David Schade, Chenzhou Cui, Sarah Weissman

Report content

- DOI structure
- State of the art : DOI usage in astronomy

Examples of Data Center implementation:

- Interconnected resources in different granularity (Chandra)
- DOI reservation before publication (Chinese VO)
- Landing pages example
- etc.
- Meta-data proposal and good practices

Report on the DOI session held at the IVOA conference 2018

Working Group

DCP

Author(s)

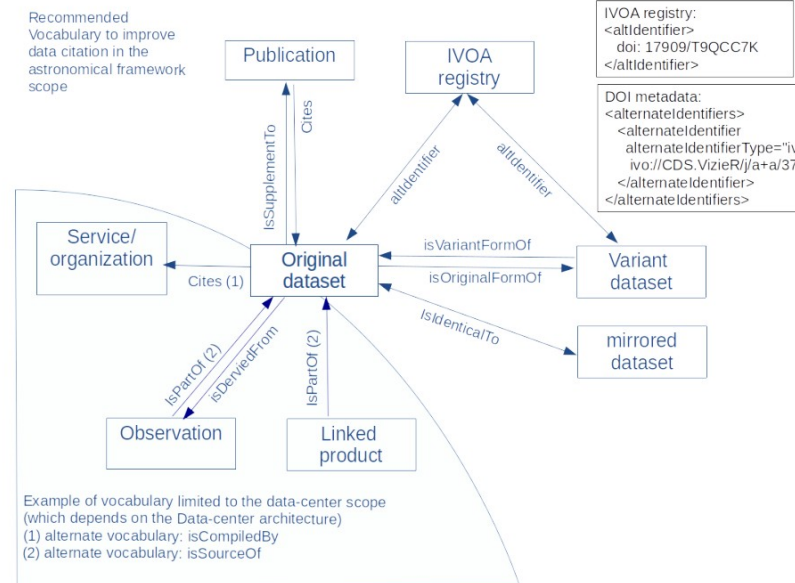
Andre Schaaff, Tim Jenness, Raffaele D'Abrusco, Gilles Landais, August Muench, Anne Raugh, Arnold Rots, David Schade, Chenzhou Cui, Sarah Weissman

Editor(s)

Andre Schaaff

Abstract

The IVOA Data Curation and Preservation Interest Group (DCP) aims at sharing best practices and engaging IVOA member projects in the long-term curation and preservation of astronomical data. A DOI (Digital Object Identifier) is a permanent identifier including metadata. DOI metadata are integrated in the FAIR perspective allowing their indexation and resulting in a PID (Persistent Identifier) network. The Metadata schema used by DOIs includes the ability to link resources that have a persistent identifier. These links establish dependency relationships between resources of different nature and granularity.



DOI in the Open Science



Challenges

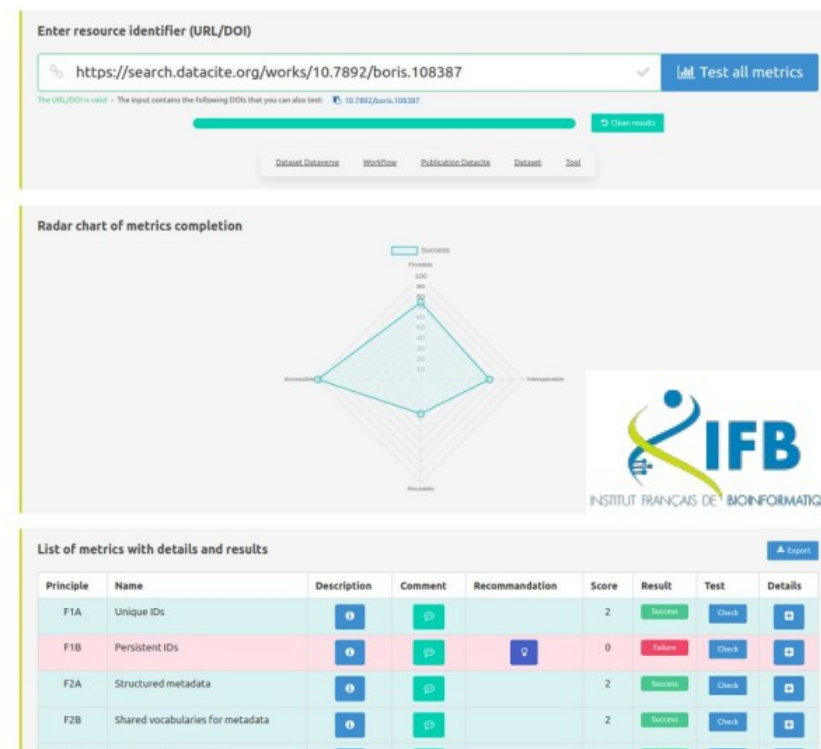
- Improve data & service citation
- Make the bridge between resources available in the registry and Open Sciences (interdisciplinary) platforms
- Build an interconnected network of “citable” resources
eg: link data with articles
- Provide a high level of meta-data quality that can be exploited to cite data
- Check metadata relevance for astronomical data in DataCite schema

Meta-data high quality level



- Meta-data quality in accordance with editors requirements (citation policies)
- Maintain DOI collection with meta-data that can evolve (ex: URL, keywords)

<https://fair-checker.france-bioinformatique.fr/>



The FAIR-Checker tool
(atelier technique EOSC-France,
C. Blanchet, CNRS, IFB)

Make the bridge with Open sciences



Proliferation of catalogues, platforms, search engines

- IVOA Registry Harvesting by B2Find
- EOSC search engine developments (<https://explore.eosc-portal.eu/search/find>)
- etc.

→ Risk of non-indexation for resources without DOIs

→ Risk of multiplying the indexing with metadata of different quality levels



EUROPEAN OPEN
SCIENCE CLOUD



DataCite

 RÉPUBLIQUE
FRANÇAISE recherche.data.gouv.fr
*Liberté
Égalité
Fraternité*



Make the bridge with Open Sciences



Example : Vizier record indexed in the EOSC service

- Powerful Algorithm based on OpenAire which includes a merge capability
 - Several sources of harvesting : DataCite, B2Find, HAL, etc.

Research Data . 1994

Isophotometry of ellipticals in Abell clusters

Authors: PORTER, A.C.; SCHNEIDER, D.P.; HOESSEL, J.G.;

DOI: [10.26093/cds/vizier.51011561](https://doi.org/10.26093/cds/vizier.51011561)

Publisher: Centre de Donnees Strasbourg (CDS)

VizieR online Data Catalogue associated with article published in Journal Astronomical Journal (AAS) with title 'CCD observations of Abell clusters. V. Isophotometry of 175 brightest elliptical galaxies in Abell clusters' (bibcode: 1991AJ....101.1561P)

Average popularity Average influence

Other Research Product . Other ORP Type . 1997

Isophotometry of ellipticals in Abell clusters

Authors: PORTER A.C.; SCHNEIDER D.P.; HOESSEL J.G.;

Publisher: CDS

(no description available)



Interop Bologna, may



3 mixed sessions: in persons and in remote

Wednesday May 10 @09:00 (Registry/DCP session) Plenary Room	
Speaker	Title
S.Derriere (CDS)	Description of HiPS surveys in the IVOA registry
G.Landais (CDS)	Data Origin in the VO
M.Demleitner (GAVO)	DOIs for everyone in the VO: VOiDOI
Harry Enke (IAP)	Proving metadata in DataCite and in IVOA
Yihan Tao (NAD)	NADC implementation of DOI
R.D'Abrusco (CfA)	A Chandra-centric approach to DOIs
C.Arviset (ESA)	ESA Data Discovery Portal, link to ESA datasets DOIs and to Google Dataset Search.

Wednesday May 10 @14:00 (DCP session) Plenary Room	
Speaker	Title
G.Landais (CDS)	DOI status in IVOA
Gus Muench (AAS)	The utility of dataset DOIs in manuscript review and scientific publications
S.Peroni (Bologna university)	DOI (and Beyond) for Publications and Other Citable Research Outcomes
A.Accomazzi (ADS)	
B.Cecconi (Obs Paris)	Data Management and DOI implementation and lessons' learnt
M.Pearson (Nasa)	NASDA DOI Registration guidelines and general guidelines process.
R.d'Abrusco (CfA)	Conclusion

Mailing list DCP: <http://mail.ivoa.net/mailman/listinfo/datacp>

Chair: gilles.landais@unistra.fr

Vice-chair: August Muench

Raffaele d'Abrusco : CSP

Twiki: <https://wiki.ivoa.net/wiki/bin/view/IVOA/IvoaDCP>

Slack channel: <https://ivoa.slack.com/> #mtg-bologna-2023

DOI Discussion (EDU/DCP session) Thursday, May 11 @16:00 (room 216)	
Speaker	Title
A.C.Raugh	Introduction
All	DOI discussion